



W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)							
DATE	STEP	Description of NC Section A	Corrective Action		Section B		Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng		Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 70210**

Tuesday, May 31, 2011 11:13:58 AM



Page 2

Item ID: D206-667-147TRN

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Assembly, Mid Fwd

Start Date: 5/31/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 6/8/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130

QC1- Inspect dimensions to dimension sheet

0.00



QC

Memo

0.00

Quality Control

140

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

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Tuesday, May 31, 2011 11:13:58 AM



Page 3

Item ID: D206-667-147TRN

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Assembly, Mid Fwd

Start Date: 5/31/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 6/8/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160  QC Quality Control	QC3- Inspect Part Finish  Memo	0.00  0.00		11-6-16					
170  Packaging Packaging	Packaging  Memo Identify and stock in kanban rack Location: 46	0.00  0.00		11-6-16					
180  QC Quality Control	QC21- Final Inspection - Work Order Release  Memo	0.00  0.00							  mtf 11-06-16

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NOTE: Date & initial all entries

# Picklist Print

Tuesday, May 31, 2011 11:14:04 AM

Page 1

Work Order ID: 70210



Parent Item: D206-667-147TRN



Parent Item Name: Crosstube Assembly, Mid Fwd



Start Date: 5/31/2011

Required Date: 6/8/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP rev:A 11.01.06 new issue DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6002-115 		Manufactured	No			100	Each	31.0000	1	1			
Crosstube Material													

Location

Loc Qty

Loc Code

LG

31

34684

1

34776

30

man, 11/06/17

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries



<b>DART AEROSPACE LTD</b>	<b>Work Order:</b> 70210
<b>Description:</b> Crosstube Assembly	<b>Part Number:</b> D206-667-142
<b>Inspection Dwg:</b> D206-667-142 Rev: A	<b>Page 1 of 1</b>

### FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+ .005	2.243	✓		Mirc	CNC-04
	1.984	+ .005	1.984	✓		"	
	2.019	+ .005	2.024	✓		"	
	2.058	+ .005	2.063	✓		"	
	2.097	+ .005	2.101	✓		"	
	2.136	+ .005	2.140	✓		"	
	2.176	+ .005	2.180	✓		"	
	0.125	± .010	.125	✓		Vern	JF-01
	R 0.063	± .010	0.063	✓		RG	
SIDE B	R 2.00	± .010	2.000	✓		"	
	R 0.063	± .010	0.063	✓		"	
	4.438	± .030	4.433	✓		Vern	JF-01
	2.240	+ .005	2.245	✓		Mirc	CNC-04
	1.984	+ .005	1.985	✓		"	
	2.019	+ .005	2.023	✓		"	
	2.058	+ .005	2.062	✓		"	
	2.097	+ .005	2.100	✓		"	
	2.136	+ .005	2.139	✓		"	
	2.176	+ .005	2.180	✓		"	
	0.125	± .010	.125	✓		Vern	JF-01
	R 0.063	± .010	0.063	✓		RG	
	R 2.00	± .010	2.00	✓		"	
	R 0.063	± .010	0.063	✓		"	
	4.438	± .030	4.432	✓		Vern	JF-01
	99.84	± .020	99.84	✓		tape	MM-L-02

<b>Measured by:</b> AMM. Lbr	<b>Audited by:</b> [Signature]	<b>Preliminary Approval:</b>		
<b>Date:</b> 11/06/13	<b>Date:</b> 11.06.14	<b>Date:</b>		
<b>Rev</b>	<b>Date</b>	<b>Change</b>	<b>Revised by</b>	<b>Approved</b>
B	10.04.14	Added preliminary approval	KJ	

11.04.15

Item	Qty -147	Part Number	Description
1	X	D206-667-147	CROSSTUBE ASSEMBLY (206L MID FWD)
2	1	D6002-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

# **GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6002-115  
FINISHED LENGTH = 99.84±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-147" AND BATCH NUMBER ON  
INSIDE OF CLIFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
- 7) WEIGHT: 15.0 lbs (-507 = 12.84)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,  
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE  
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI  
015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE  
THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS  
ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS  
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT  
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN  
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER

NO. 70210

PL11-05-31

**RELEASED**  
2011-05-26  
JW

A	NEW ISSUE	CP	10.11.23
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	10.12.23		

<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D206-667-147	REV. A SHEET 1 OF 4
TITLE CROSSTUBE ASSY (206L MID FWD)	SCALE NTS
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W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

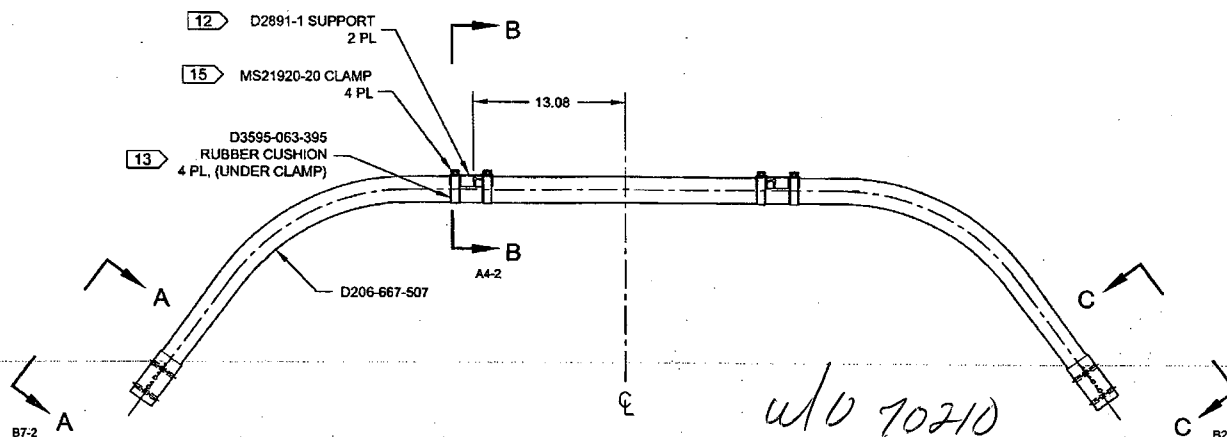
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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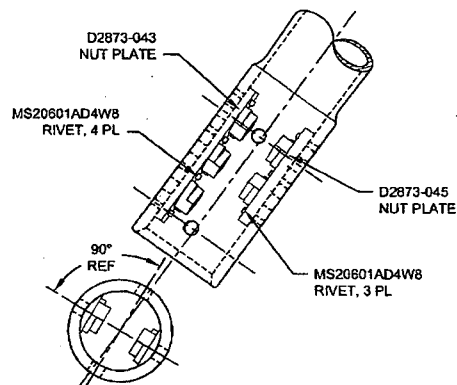
NOTE: Date & initial all entries

8 7 6 5 4 3 2 1

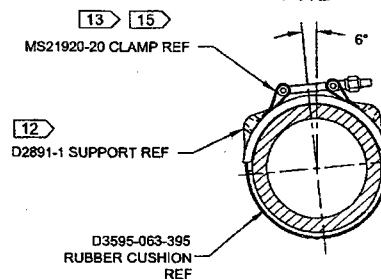


**D206-667-147**  
**ASSEMBLY DETAIL**  
(VIEW LOOKING FWD)

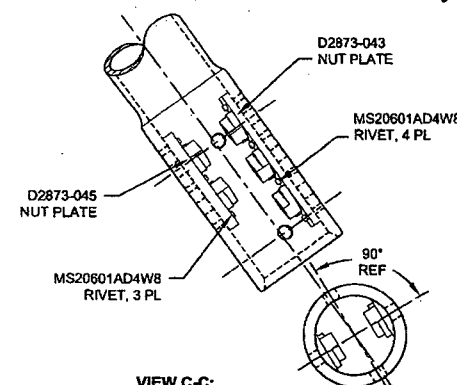
**RELEASED**  
2011-05-24



**VIEW A-A:**  
**CUFF DETAIL**  
SCALE 4X



**SECTION B-B**  
SCALE 5X



**VIEW C-C:**  
**CUFF DETAIL**  
SCALE 4X

DESIGN	97	<b>DART AEROSPACE LTD</b>	
DRAWN	97	HAWKESBURY, ONTARIO, CANADA	
CHECKED	97	DRAWING NO.	REV. A
MFG. APPR.	97	D206-667-147	SHEET 2 OF 4
APPROVED	97	TITLE	SCALE
DE APPR.	97	CROSSTUBE ASS'Y (206L MID FWD)	NTS
DATE	10.12.23	COPYRIGHT © 2010 BY DART AEROSPACE LTD	
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8 7 6 5 4 3 2 1

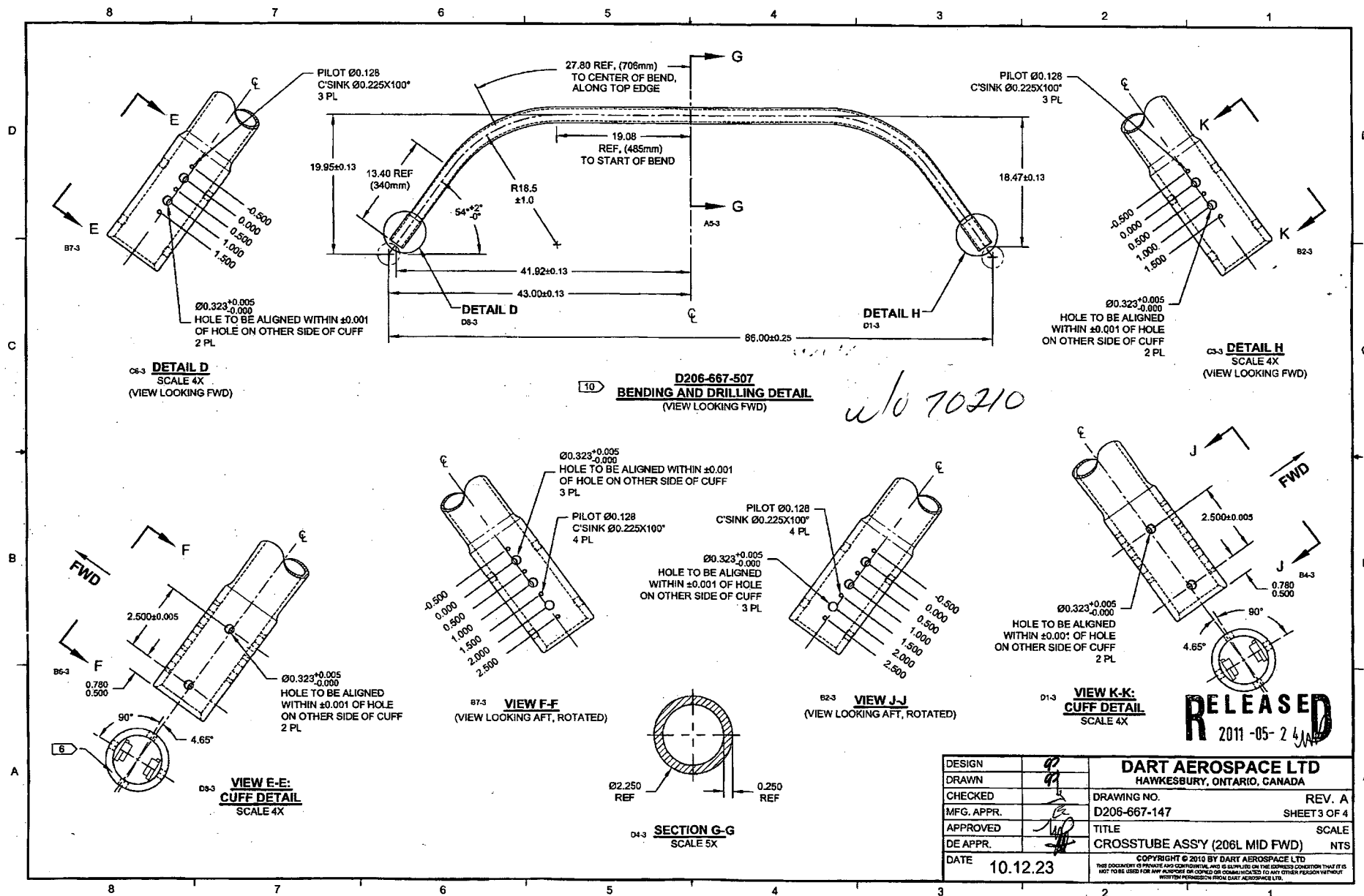
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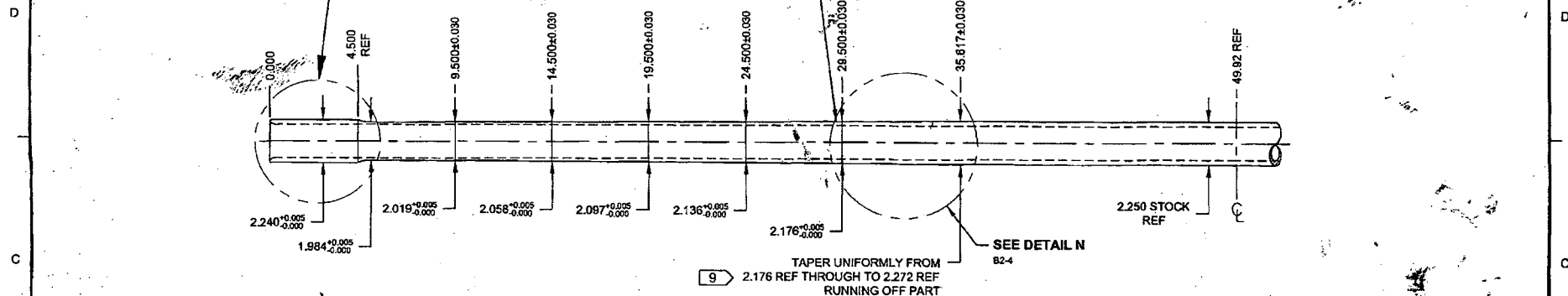
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Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

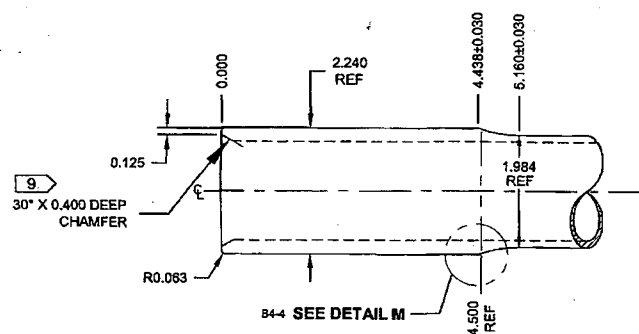
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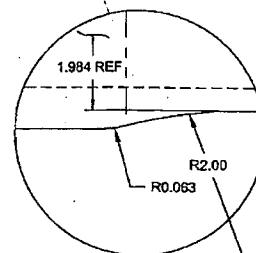
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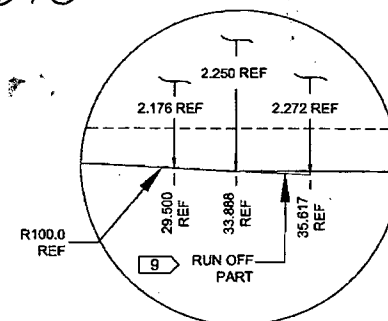
# TURNING DETAIL



**DETAIL L:  
CROSSTUBE CUFF**  
NOT TO SCALE



**DETAIL M:  
CUFF TRANSITION**  
NOT TO SCALE



**DETAIL N:  
TAPER RUN-OFF**  
NOT TO SCALE

**RELEASED**  
2011-05-27

DESIGN	92	<b>DART AEROSPACE LTD</b>	
DRAWN	92	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D206-667-147	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206L MID FWD)	NTS
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